Magnesium: Reversing Disease:
A Special Interview With Dr. Thomas Levy

By Dr. Joseph Mercola

Dr. Joseph Mercola:

Welcome everyone, this is Dr. Mercola helping you take control of your health, especially in these challenging times. And today we are joining by Dr. Thomas Levy, who has written a number of books. He's most widely known for his work with Vitamin C, which of course has come into special prominence now in this COVID-19 epidemic, or pandemic that we're having. But he's written another book, a most recent one, Magnesium: Reversing Disease. And when we initially scheduled this interview, which was last year I believe, this was not an issue. In fact, it wasn't even known in China that this was an issue. So obviously things have changed, so we're going to morph the interview into dialogue that... to integrate some of this information here, because I think that would be really useful. So welcome, and thank you for joining us today.

Dr. Thomas Levy:

My pleasure. Thank me... Thank you for having me Joe.

Dr. Joseph Mercola:

So I guess rather than me provide your extensive background... You're a physician, an MD, cardiologist by specialty, and have a special passion in intravenous Vitamin C... or not intravenous but Vitamin C generally, and that's what you're, I believe, most widely known for. So why don't you expand on your background to give us a perspective and framework from your position, and then we can dialogue about some of those things.

Dr. Thomas Levy:

Okay. I was just a regular old mainstream cardiologist some 25 years ago, in Colorado Springs, Colorado, when I met Dr. Hal Huggins, who many know, not everybody, was a maverick dentist and probably led the world in the anti-mercury amalgam movement. He also did a lot of other things and he invited me to come to his clinic in Colorado Springs one day, and I saw so many sick people with so many different diseases, over several days and weeks, getting so much better it kind of threw me for a loop. And one patient in particular, looked very bad while she started her dental work and two hours later she was feeling fantastic and it made no sense to undergo that much serious dental work and feel better at the end of it. And Dr. Huggins pointed at the IV, and I said, "Well, thanks a lot Hal. I know all about IVs, what are you trying to tell me?" He said, "Well, it's what's in it." I said, "What's in it?" He said, "50 grams of Vitamin C."

Dr. Thomas Levy:

And that was absolutely brand new, out of the blue information to me, but quite honestly I'm just not in the habit of denying something that my eyes have witnessed, so really that moment on triggered my research into Vitamin C and ultimately where I am today, I suppose.

Dr. Joseph Mercola:

Yeah, and just as a side not to that. Dr. Huggins is no longer with us. He was a pioneering biological dentist, and early on, through his crusading efforts, acquired quite a bit... significant damage from his mercury extractions, and I believe, succumbed to some... that was contributing to his premature death. So we're sad to have lost-

Dr. Thomas Levy:

Yeah, I do consider him the world's leading and first significant biological dentist. I would agree with you on that sir.

Dr. Joseph Mercola:

Yeah, yeah. So it was definitely a loss. He was a great pioneer. So I guess rather than jump into the book now, in light of the current pandemic we are recording this on March 24th, just to give you a time stamp. I'm not sure when this will air, because obviously this pandemic scenario is changing day by day. My frame on it is that I believe it's a sad scenario that we're in from the fact a number of people are going to be impacted and die prematurely. Maybe some not so prematurely, because it's just seems to me, effecting the elderly and the frail for the most part, certainly not a 100%. But the relative number of deaths are... the deaths are relatively small, not significantly different from, at least at this point in time, than the flu. So I think rather than the concern from the epidemic that we have to fear is really the reaction to the epidemic. Especially the government reactions, which is shutting down the economy and literally driving us into a massive depression. Where a minimum of one fourth to one third of the country will be unemployed, which is going to create massive complications.

Dr. Joseph Mercola:

So I think that's the bigger concern and how to address that is another topic, but for those who do have concerns with respect to some of the actions that they can take to shore up their own immune system. Or if for some reason they come down with this infection or another similar infection, which would be the flu or a cold, which can have similar complications, then some of the strategies that you've acquired over the years, I think, can be very helpful. So why don't you share your perspective and tell us what... how you would approach this.

Dr. Thomas Levy:

Well, obviously, I don't want to minimize what the government doctors have been saying about hygiene, washing and that sort of thing that's obviously extremely important, and I don't want to say that it's not, it is. However, we want to talk about what to do to best prevent getting the virus and if you eventually get the virus, how then best to approach treating it. Preventing is just to stimulate your immune system as best as possible. As I'm sure you know Vitamin C is one of the primary... I personally believe from the research and literature, the primary agent that's stimulates an arms and maximizes the potency of the immune system. So I don't think it can be undersold as to how important a regular dose of C... How much? Well as a general recommendation, two to three grams, three or four times a day, somewhere in that range for most people.

Dr. Thomas Levy:

Some people will be sensitive, take less, some people can take more, but ball park, that would be the ball park. It's very important to take Vitamin D as well. Probably somewhere along the lines of 10 to 15,000 units a day at least during the time of the epidemic, later on perhaps less. A good preparation of

zinc also helps arm the immune system, and any of the basic good vitamin and nutrient supplements are fine, but those are the premier ones, okay?

Dr. Joseph Mercola:

Mm-hmm (affirmative).

Dr. Thomas Levy:

General supplementation should also always include Vitamin K as well because... and magnesium, which I guess, we'll talk about a little bit later. But I consider Vitamin C, magnesium, Vitamin D, and Vitamin K2 to be the premier, top four supplements for promoting and maintaining good health. Mainly because they're the primary antagonists to calcium accumulation and excess calcium inside the cell, which I might later be able to show you, I consider to be the primary pathophysiology in all disease. Now one other thing, bring in something out from left field, but I tell you, I could not believe that it's more important, Joe, and that is... and I've done it myself, a lot of family and friends already. For both prevention and treatment nebulization with hydrogen peroxide. Hydrogen peroxide absolutely destroys everything on an open wound. Well, guess what? When you put a fine mist of it inside your sinuses, nose, and throat it nukes the virus there too.

Dr. Thomas Levy:

And one thing, I don't think it's emphasized enough is that, even when you're systemically ill influenza or coronavirus and you have virus in your body, the thing that's fueling it is still an ongoing massive replication of the virus in the sinuses, nose, and throat. And when you can effectively knock that down 99% plus, as I like to say, "You lop the head off the snake." And then the body is in great shape, especially with the support of things like Vitamin C to mop everything up. Also, you mentioned Dr. Rowen, that you talked to recently, and ozone is fantastic, it's just that ozone is not readily available for most people, but gosh, if you have an ozone using physician that can give you ozone treatments of the blood when you have this or any other virus, that would be a phenomenal intervention as well.

Dr. Thomas Levy:

In the nebulization I'm talking about, it's the regular, over the counter, 80 cents a bottle at Walmart, three percent hydrogen peroxide. If you don't mind a little discomfort, you can do the full strength, but you can-

Dr. Joseph Mercola:

No, no, no, no.

Dr. Thomas Levy:

But you can get a great effect with 50%, 25%, of that concentration or less. So bottom line is, whatever aggravation it causes to nose and sinuses, those rapidly resolve once you stop the nebulization.

Dr. Joseph Mercola:

So you're talking about diluting the regular three percent by 50% [crosstalk 00:09:21]-

Dr. Thomas Levy:

Yes, diluting it 50/50 or-

Dr. Joseph Mercola:

Okay.

Dr. Thomas Levy:

... diluting it 25/75, yes, sir.

Dr. Joseph Mercola:

Okay. That's good. So yes, actually, my interview with Dr. Rowen, which I did just yesterday actually, we discussed that, and he... Interestingly, hydrogen peroxide is a form of oxidative therapy-

Dr. Thomas Levy:

Absolutely.

Dr. Joseph Mercola:

... which is certainly what ozone is and also what Vitamin C when it's used in high therapeutic doses, I believe. I believe the doses, especially the ones that you are recommending, which are, I view as a megadose, or orthomolecular dose, is more of a drug than a nutrient, and it has very powerful anti-viral activity, anti-pathogenic activity because-

Dr. Thomas Levy:

Sure.

Dr. Joseph Mercola:

... of its oxidative action. But I want to finish up on this and then we can go back to discuss the dialogue and those, because I have a few disagreements there, or points for discussion. So Rowen had suggested that one... Well, first of all the nebulizers, where do you get them? You can get inexpensive ones on Amazon for $30. Those will probably break in a week or two. The better ones are the ones they use to inhale agents that can be used for asthma, typically, those are closer to 75, 80, a $100. They'll last you-

Dr. Thomas Levy:

I found this little... This little one to work very well.

Dr. Joseph Mercola:

Which one is... let me see.

Dr. Thomas Levy:

It's portable-

Dr. Joseph Mercola:

Yeah, that's the one... Those are about $30-

Dr. Thomas Levy:

Right.

Dr. Joseph Mercola:

I bought one of those too and it broke in two weeks. Now, show that... No, show it up there. Show it Tom. So that mask is really, really good, because the nebulizers come with a mouth piece, which is not as good as that mask, because the mask allows you to inhale it through your nose and your mouth, actually, through your nose. With the mouth piece, you can only inhale through your mouth, which is not that good. So I like that mask-

Dr. Thomas Levy:

Absolutely, the-

Dr. Joseph Mercola:

I like that mask.

Dr. Thomas Levy:

You want to reach both the nose and the sinuses if at all possible-

Dr. Joseph Mercola:

Yeah, yeah.

Dr. Thomas Levy:

... and you won't do that with just the mouthpiece.

Dr. Joseph Mercola:

Yeah, so if you get a nebulizer, make sure you can use that mask, because that... So I use that mask from that device, which broke for me in two weeks and said... because it's a cheap unit made in China. You can get another one, but they're probably sold out now on Amazon anyway, but any way, I couldn't agree more. The hydrogen peroxide is a great strategy and Rowen likes to integrate it with ionic colloidal silver, which you can actually combine with the peroxide, they mix quite well. There are certain types of silver that are more metallic that will oxidize, so those you can't, but it's a good strategy.

Dr. Joseph Mercola:

So let's get back to the Vitamin C... Excuse me. The dosage, which you're recommending anywhere from six to nine grams a day. The RDA is certain significantly below that, somewhere about a 100 milligrams or so would be generous. But I'm not convinced from the literature that it's necessary to take that on a regular basis. I have no problems using that dose and doses 10 times higher than that as an effective therapeutic intervention for treating an acute illness. Although after the discussion with Rowen yesterday, if I had access to ozone or Vitamin C, I would go with the ozone. I think it's a more effective strategy and that-

Dr. Thomas Levy:

Well, epidemiologically there's no question, if the whole population just took one gram or two grams a day, I believe it would have enormous impact on the general public health and the incidents of infectious disease. This dosage was born-

Dr. Joseph Mercola:

Let me stop you there-

Dr. Thomas Levy:

Okay, sure.

Dr. Joseph Mercola:

... so the benefit that you're suggesting is because it's acting as a therapeutic anti-pathogenic agent or is it because it's optimizing nutritional levels systemically in biological redactions where it's necessary for such as collagen production?

Dr. Thomas Levy:

Well, primarily because it's arming the immune system. And I might add one of the reasons why we go with doses like that is because we try to follow the example of the animals that make their own Vitamin C and animals that are roughly the size of a human being will make, roughly, six, eight, 10 grams a day, and a whole lot more when under stress. So when you think in terms of the fact that our livers should be producing Vitamin C, but we lost the fourth enzyme, it's not such an astronomical dose. And that dose is actually being delivered directly into the bloodstream and not being poorly absorbed orally, so I would submit it's not that outlandish a dose, but, yes, it takes a little attention to detail. If you don't have a liposome form or you're not taking intravenous, it requires taking it multiple times during the day for optimal effect. All of which of course impedes compliance, but in terms of what is best physiologically for the immune system, my conviction is that type of dose is warranted.

Dr. Joseph Mercola:

Yeah, I have a different belief system, because you're suggest that in somehow the way we developed implies that humans were some... that our biology was somewhat foolish and just forget to make Vitamin C, but I believe that there's a lot more intuitive wisdom in nature and there was a good reason why we don't make it. I don't know what that reason is and I can't offer a counter hypothesis, but I'm fairly confident that if that's what happened that there's a reason for it. And-

Dr. Thomas Levy:

May I add Joe, we-

Dr. Joseph Mercola:

Yeah.

Dr. Thomas Levy:

... recently came... We, a colleague of mine, recently came upon a supplement, a nutrient polyphenol. It comes from olive leaf extract and we've done a lot of testing on it. And it's not large studies, but what we've done has shown that this appears to unblock whatever the transcription deficiency is for the fourth enzyme to make Vitamin C from glucose and it results in significant and chronic elevations of Vitamin C in the blood. So it's not-

Dr. Joseph Mercola:

Interesting.

Dr. Thomas Levy:

... a genetic defect that's irreversible it would appear.

Dr. Joseph Mercola:

So we still have the genetic machinery there, it's some of the mutation... at least the speculation is a mutation that we lost this enzyme or this ability to... one of the steps in the process of making Vitamin C. And Vitamin C is not much different than glucose. I mean, it's pretty similar molecules, so it's not that-

Dr. Thomas Levy:

That's the substrate that you start from when you make Vitamin C is glucose, yes, sir.

Dr. Joseph Mercola:

Yeah, so it's not a very biologically complex molecule and glucose is obviously a very common substrate, so it's readily available. So is this polyphenol from the olive leaf extract you said-

Dr. Thomas Levy:

Yes.

Dr. Joseph Mercola:

... is that available commercially, or is this something still under study?

Dr. Thomas Levy:

No, it's available commercially. They have smaller amounts just in the olive leaf extract, but my colleague has make a product and this is what we've been testing, it's called Formula 216, and that's the website. Formula216.com, a lot of this information is there. If people want to evaluate it, that's fine. I've been taking it for two years and with, what I feel are, great results.

Dr. Joseph Mercola:

So it's interesting. So the... If you're taking this, at least on the theory of it working, then you wouldn't really need the two to three grams, three times a day. I would suspect, because you're essentially allowing your body to make it as it needs it, which is the ideal form. The problem I have with taking any supplement is that you don't know what the ideal dose is, and you're playing God with your nutrients and suggesting that you know better than what your body should do. And that's the problem I have with taking a lot of antioxidants, because generally, in taking excessively as many people do, they can suppress beneficial free radicals, which are important biological signaling molecules. So-

Dr. Thomas Levy:

Well, what we have documented quite interestingly, Joe, is that... I'll mention his name, Dr. Ron Hunninghake, I know you know him-

Dr. Joseph Mercola:

Mm-hmm (affirmative).

Dr. Thomas Levy:

... and I both did a trial at the Riordan Clinic, where the idea is if everything's working fine in your liver and you have a toxic stress, you make more Vitamin C in response to it. Whereas if you can't make Vitamin C, your levels drop as you utilize your Vitamin C. So quite honestly we both got... We did all our testing and we both got quite drunk, alcohol is a wonderful toxin. And we documented that our blood levels went up substantially, did not go down, and then stayed elevated for 24 hours, while we went through whatever the recovery process is of that alcohol load. So that was very exciting to us to see a situation where, "normally," your blood level and urine level of Vitamin C would go down, and instead it went up and went up dramatically.

Dr. Joseph Mercola:

And this is taking that Formula 261?

Dr. Thomas Levy:

216. Two, one, six-

Dr. Joseph Mercola:

216.

Dr. Thomas Levy:

... yes, sir.

Dr. Joseph Mercola:

Two, one, six, okay. Interesting. So are you taking the higher doses that you recommended earlier with taking Formula 216? [crosstalk 00:18:24]-

Dr. Thomas Levy:

Actually, myself, I just take the Formula 216 and sort of like what you alluded to, I take usually two grams of the liposome encapsulated Vitamin C a day. That's usually my Vitamin C regiment.

Dr. Joseph Mercola:

Okay. So you're taking a lower amount, but still taking the C.

Dr. Thomas Levy:

Yes, sir.

Dr. Joseph Mercola:

You don't believe these polyphenols would modulate your ascorbic acid levels or Vitamin C levels the... ideally, and you needed the extra bump or boost? Or is it just insurance? Or-

Dr. Thomas Levy:

Well, the reasoning there, and I do feel quite comfortable that I have Vitamin C in substantial amounts all the time, is that there's a difference between preventing disease and resolving disease. And a larger amount of Vitamin C in your bloodstream is going to give you a greater resistance against a given pathogen load than a lower amount, even if that lower amount is in "the normal range." The liver is not

going to start making more Vitamin C to a quick challenges, it's going to start making more Vitamin C once an infection has taken hold.

Dr. Joseph Mercola:

So you don't perceive any... or have no concerns over chronic higher doses... I guess based on the presumption that other animals haven't lost this ability to produce it, have such high levels and that our levels should be... if we were to consume it orally, would be closer to 10 grams a day?

Dr. Thomas Levy:

Yes, sir. No, I have no concerns about that. No.

Dr. Joseph Mercola:

Okay. All right, there are some issues... We should clean up this topic too, because there's a lot of little details. There is one genetic disease, which you discuss in the book too, and it's widely... well, not maybe widely known, but if anyone is doing intravenous Vitamin C, they certainly should know and test for this, and that's a genetic disease called G6PD deficiency, Glucose six Phosphate. Which is the pathways that's primarily responsible for creating NADPH, and which, I believe, is the most important electron donor in the body. You have a different belief and you believe it's Vitamin C, but I would... there's some pretty strong-

Dr. Thomas Levy:

Well, I believe Vitamin C is the pilot. It will supply electrons that end up eventually getting relayed where they need to go via other electron acceptors and donors. So, no, it's just sort of the... I mean, Glutathione for example, is the most-

Dr. Joseph Mercola:

Yeah.

Dr. Thomas Levy:

... important and most concentrated inside your cell, but without the Vitamin C coming in on regular doses that works to keep the Glutathione in as reduced a state as possible so it can have the maximal effect inside the cell. So, no, it's not a superiority type thing, it's just where it fits in keeping the electron flow going everywhere it needs to go.

Dr. Joseph Mercola:

Yeah, I know your book is written for a layperson, but it just... it seems like it ignored the value of NADPH in a molecular biological level, because it's the ultimate electron donor. The battery of your cells, and if your NADPH is going, you're in bad shape. Interestingly, it's cousin, NAD plus, is what many would advocate for alcohol toxicity, and in fact, Bill from Alcoholics Anonymous, the guy founded it, I forget his last name, or maybe he's just called Bill, had initially recommended Niacin as part of the therapy of Alcoholics Anonymous, but then somehow was not able to integrate it into the program. Niacin is of course, is a precursor, a metabolic precursor NAD.

Dr. Thomas Levy:

Sure.

Dr. Joseph Mercola:

So that's really useful for alcohol detox. So anyway-

Dr. Thomas Levy:

Let's say, I've always maintained that you should have as rich a matrix of antioxidants in your body as possible. They interact, they regenerate each other, and the different characteristics chemically of one versus the other determines where it can get and what pathways it can intervene in. So I think we're in a basic agreement, although I'm not an expert on NAD and NADH, and it was-

Dr. Joseph Mercola:

NADPH.

Dr. Thomas Levy:

NADPH, excuse me, and it wasn't an intentional neglect by any means-

Dr. Joseph Mercola:

Yeah, I didn't think so, but just to be comprehensive because it's... NAD plus has gotten a lot attention recently because of Sinclair's work at MIT and then Harvard as its fuel for this longevity approach in [inaudible 00:23:02], and it really is an essential molecule and the deep appreciation of that is just now beginning to become understood, so... But anyway, its... they do all work in concert so it's an interesting symphony that the body puts together to make us healthy. And if we can optimize things, it's even better. But anyway, so we can go on to administration in cleaning things up with the Vitamin C, because interestingly the... there is some toxicity to Vitamin C and to ozone. Ozone into specific endothelial cells in your lungs but also in the lining of your veins, they don't have enough of an antioxidant called catalase, and... Catalase allows the conversion of the peroxide that's generate to convert to water, and because it's not there it can be very irritating to the veins, and in your lungs... the lungs, but you're not going to be breathing in peroxide.

Dr. Joseph Mercola:

Actually, not breathing in peroxide, you are breathing in peroxide. Actually, I wonder how that would work now that I think about it, because you and Rowen both recommended the peroxide, but there's no catalase in there. So ozone is ozone, you cannot breathe in ozone. I mean, you could, but you'd be [crosstalk 00:24:25]-

Dr. Thomas Levy:

Oh, yeah. Not for long-

Dr. Joseph Mercola:

... because it's quite toxic.

Dr. Thomas Levy:

About one or two breaths.

Dr. Joseph Mercola:

Yeah, yeah, and you'd be coughing like crazy, because it's-

Dr. Thomas Levy:

Exactly.

Dr. Joseph Mercola:

Yeah, but you can... But it's interesting that the peroxide doesn't cause, doesn't cause a reaction. I should have asked him that yesterday.

Dr. Thomas Levy:

I can't say this authoritatively, but my impression is number one, the peroxide I a very... is a molecule capable of quick and easy diffusion across a lot of membranes. I think what happens is it rapidly gets inside the cell and then the breakdown of the hydrogen peroxide, just like the Fenton reaction, then proceeds to hydroxyl radical-

Dr. Joseph Mercola:

Once it bypasses into thelium, it gets into... the catalase is there and takes care of it, no problem. That would be a good answer. That would make sense. So anyway it doesn't do that in the veins, so maybe you can discuss your protocol, because you have a lot of experience with intravenous Vitamin C, and there's a lot of interest in it now, especially in Wuhan China they're doing studies with all these people who are infected with intravenous C. I'm sadden to... that they're not integrating these with ozone therapies, because that would be interesting to see. But anyway, so what are your observations on the rate at which you can administer intravenous Vitamin C and not cause vein irritation?

Dr. Thomas Levy:

Oh, when you have a pH-balanced solution, which is usually just sodium ascorbate dissolved in water, you can have ascorbic acid dissolved in water, but buffered up with sodium bicarbonate for the same thing.WEh it's pH 72, 73, 74 and you're doing it into a good sized vein, and we've done this many, many, many times, you can give 12 grams IV push over five minutes, so-

Dr. Joseph Mercola:

Really? So-

Dr. Thomas Levy:

Absolutely.

Dr. Joseph Mercola:

It's just the pH. It's not the toxicity-

Dr. Thomas Levy:

No, no, no, no.

Dr. Joseph Mercola:

... from the lack-

Dr. Thomas Levy:

Just pH.

Dr. Joseph Mercola:

... of catalase?

Dr. Thomas Levy:

No, no, no. Just pH, yes, sir. We've done this-

Dr. Joseph Mercola:

Wow.

Dr. Thomas Levy:

... many, many, many times, and they're doing them as a routine now, Dr. Hunninghake at the Riordan Clinic. Especially, in light of the pandemic, this allow patients to come just spend 10 minutes or so at the clinic, get a quick IV push in between seven point five and 10 grams of C, along with magnesium and a ew other things, and then they're out the door, and-

Dr. Joseph Mercola:

How much-

Dr. Thomas Levy:

... you have a really good, quick... Go ahead.

Dr. Joseph Mercola:

And what's the dosage? What's the dosage on that with respect to the amount of bicarb you have to optimize the pH?

Dr. Thomas Levy:

Well, I'll say this too, I've used the McGaugh preparation, which is they say, "Buffered five point five or above." So they're never really clear, so I guess you have some preparations that are six, some are six, five, some are seven. We've used that without fuller buffering without any problem as well. It's usually... There's usually a small number of people, usually, the ladies with tinier veins, that can have the problems, but most of the time there's no problem at all. And matter of fact, many years ago, after reading Dr. Klenner's work, he reported that in a patient, that was... he said was dying of a toxic, I believe it was snake or insect bite, who said, "Doc, I think I'm going out." His blood pressure was down. Well, Klenner took out, I think it was, 15 grams, full concentration, 500 milligrams per cc of Vitamin C, started the butterfly, a 20 gauge-

Dr. Joseph Mercola:

Whoa.

Dr. Thomas Levy:

... and in Klenner's words, "I gave it as fast as the 20 gauge needle would allow."

Dr. Joseph Mercola:

Wow.

Dr. Thomas Levy:

And the patient came around very quickly, even before the plunger was all the way down. So some 15 years ago, perhaps, foolishly, I decided to reproduce that same thing on myself. I was in my office, I started the butterfly, being a Catholic, I made the sign of the cross, and then I went ahead and whammed it down, and I felt fine. I felt great. I have pretty big veins, so there wasn't any real problem with any vein irritation, but I quickly proved to myself that Klenner was shooting straight.

Dr. Joseph Mercola:

Wow. That's interesting, very interesting. So do you, I guess, gauge your therapy based on blood levels at all? It is possible to do serum levels of Vitamin C, isn't it? [crosstalk 00:29:00]-

Dr. Thomas Levy:

Yes. I mean, Dr. Hunninghake at the clinic, they'll do the blood levels for investigational purposes, but especially when you're dealing with infections, everything is clinical. I mean, you basically use enough Vitamin C to get a positive clinical response, less fever, less sweating, improved blood work, et cetera. And it's strictly clinical, empirical. So, no, I've never gauged a treatment on reaching a certain blood level. But-

Dr. Joseph Mercola:

Yeah, the reason-

Dr. Thomas Levy:

... that's good to know for research purposes, I agree, just not necessary clinically.

Dr. Joseph Mercola:

And the reason I ask is for those of comparison, because you alluded to another form of Vitamin C administration, which is liposomal as opposed to oral. Which, actually, liposomal is oral, but it's more effective and closer... more closely related to [inaudible 00:29:53], and I'm wondering if anyone in... if you or anyone in your clinic or researchers you're aware of that has compared liposomal Vitamin C versus intravenous and what those comparisons might look like?

Dr. Thomas Levy:

Yeah, we just recently did that at the Riordan Clinic. It was a small study and we were just looking at Vitamin C levels inside cells. And in particular it was less of a... the IVs and the liposomes were comparable, although the liposomes were better, as we would expect, with intracellular concentrations. And in particular, in this one particular study we also looked at the effects of hydrocortisone, in particularly with the liposome C and we were looking at Vitamin C concentration inside lipocytes, the intracellular levels. And we found that the presence of the hydrocortisone massively increased the amount of Vitamin C that goes inside the cell. And this is very interesting because when you think about the fact that probably, I would think, among all prescription medicines, although it's a natural agent as well, hydrocortisone is considered your number one antiinflammatory agent. And it's my opinion, not

fact, but opinion that the primary reason hydrocortisone is your primary antiinflammatory agent is because it exerts such a profound effect on putting Vitamin C inside the cells.

Dr. Joseph Mercola:

Interesting. So you looked at intracellular C levels and they were higher with liposomal C administration as composed to IV?

Dr. Thomas Levy:

Yes, as I recall.

Dr. Joseph Mercola:

And that makes a lot of sense too, because it should penetrate the cellular membrane more easily and it's... actually that's where you need it.

Dr. Thomas Levy:

Yes, sir.

Dr. Joseph Mercola:

You need it inside the cell, you don't need it in the plasma or the interstitial area as much. So that is a good point. I have a... But the tests that are available clinically are serums tests, aren't they? Like a-

Dr. Thomas Levy:

I think plasma. Yeah, plasma.

Dr. Joseph Mercola:

Okay. So has your clinic looked at the plasma levels between liposomal C versus intravenous?

Dr. Thomas Levy:

I believe... I hate to sound uncertain on this, but I believe that was examined in this study, but I don't want-

Dr. Joseph Mercola:

Okay.

Dr. Thomas Levy:

... to misrepresent the results.

Dr. Joseph Mercola:

Okay. Maybe if you can forward me the study and we can include that in the show notes here.

Dr. Thomas Levy:

Okay.

Dr. Joseph Mercola:

All right. I think that's most of the information, unless there's anything else you liked to add to that. Oh, what we didn't finish up on was the G6PD. Now, the reason that's important, because if you had this enzyme defect, which is actually pretty common, especially in African Americans. I think it's about one in a 100 in the population. Not African Americans, but this genetic snip. And if you have it and you take high doses, not a normal dose of Vitamin C, even the dose you're recommending, but certain under a gram, it's just not going to be an issue, you can get hemolysis of the red blood cells. And that can be a pretty significant crisis. So I'm wondering what is your protocol for doing this test before you administer intravenous C?

Dr. Thomas Levy:

Well, medical, legally, yes, it's fine to do the test on everybody. If you do have someone that's positive, they're... you need to remember that the reason the red blood cells are hemolyzing is because they have increased intracellular or intra red blood cell oxidative stress, and this is due to decreased glutathione levels inside the cell, decreased Vitamin C levels inside the cell, increased calcium levels inside the cell. And so you can bolster these people up by giving, usually, liposomal or intravenous forms of glutathione aa day or two before as well as intravenous magnesium. This builds up the resistance of the cell and then you start out and build up slow. But let me also say that you counsel the patient that we want you to drink a lot of water, stay well hydrated and you tell us if you notice any change at all in the color of your urine. And you'll find out early on, long before there's a massive hemolysis that's life threatening, whether something [inaudible 00:34:29] action.

Dr. Thomas Levy:

Now that is the overall approach, but I also have to follow up and say, especially, at the Riordan Clinic, where I'm a consultant, I don't think we've ever seen that, not even once. Now, obviously in a certain populations, let's say if the Riordan Clinic was in Africa, well then it might be a whole lot more concern, but there's a lot of people of color that come to the Riordan Clinic as well and it's just not turned out to be a problem. Although with the reports and the literature as they are, you're probably not doing yourself any favors medical legally if you don't check the test.

Dr. Joseph Mercola:

Yeah, we.. I failed to mention in addition to being an MD, you're also a JD, so I believe if that is [crosstalk 00:35:12]-

Dr. Thomas Levy:

Yeah, that's correct. Juvenile delinquent it stands for.

Dr. Joseph Mercola:

Yeah, there we go. And I guess the Riordan Clinic does use pretty high doses. What is the high dose they typically go to, a 100 grams or so?

Dr. Thomas Levy:

Yeah, they'll... There's some patients, not frequently, but some patients will get a 125, but most of the time it's 50 to 75 in most people, smaller women might be 25.

Dr. Joseph Mercola:

Okay. All right. That's good to know. I would also think that molecular hydrogen might be very useful in that scenario also, because it could stimulate the production of endogenous antioxidants like glutathione, catalase, superoxide dismutase, and hundreds of other endogenous antioxidants. So that would be my choice, if someone had G6PD, but that's good to know that even in a clinic like Riordan's, this is pretty much all they do full time, they haven't seen any consequences with that, because it's-

Dr. Thomas Levy:

No, not at all.

Dr. Joseph Mercola:

... clearly a concern. Okay, so we can progress now to magnesium. Magnesium is the topic of your new book, Magnesium: Reversing Disease, and is interestingly a calcium channel blocker which becomes particularly useful for a wide variety of scenarios oxidative stress. Because you mentioned earlier one of the complications of the zymolysis, is the high intracellular levels of calcium. Magnesium is a calcium channel blocker, which is one of the reasons I like it for mitigating the oxidative stress from EMF exposure. And one of my favorite applications of magnesium actually, which I don't think you discussed in the book. But it's not definitively proved, but there's quite a lot of impressive data that strongly suggests it might be beneficial. So why don't you summarize the need for magnesium and to help put it in perspective for us.

Dr. Thomas Levy:

Sure. A lot of this... the magnesium book almost came as a natural sequel to my earlier book in 2013, death by calcium. And when I did the research for that book, I had no idea before hand... I knew too calcium wasn't good for you, but I had no idea how clear cut the data was. But bottom line was, and this is why magnesium, Vitamin C, Vitamin D, and Vitamin K are so good, is they all are natural calcium antagonists, they all help dissolve preexisting calcifications and they all help to normalize the calcium in the body, and each one, individually, decreases all cause of mortality. Decreases your chance of death from anything, which means they favorably impact every cell in the body.

Dr. Thomas Levy:

Well, as I reviewed more and more studies, it became apparent to me and I've not found an exception to this yet, which is every cell that is "diseased" has increased calcium levels inside the cell. And the higher they get, if you go without killing the cell, that's when you undergo malignant transformation. It's the highest levels of calcium that also result in cancer. It was also very apparent even before I began the magnesium book, that magnesium was the number one calcium antagonist and general metabolic calcium function inhibitor, and then it mirrored everything. More calcium increased your chance of death by all causes, less decreased. More magnesium decreased it, less magnesium increased it. And so as I went into the studies on the magnesium book, wow, I think the number is magnesium is directly involved, one way or another, with 80% of all the chemical reactions in the body. So that's not... That's a significant player everywhere.

Dr. Thomas Levy:

And as it turns out as you go down disease by disease by disease, number one, it becomes apparent that magnesium deficiency by itself causes many disease, but perhaps even more importantly is magnesium deficiency, if it doesn't cause a disease, it makes all the rest of the diseases worse. Because, once again, the more calcium you get inside the cell, the more oxidative stress, the less enzymes and other

biomolecules function normally, and the more you bring that micro environment inside the cell to a reduced level, reduction, then things start functioning normally. And, wow, that's just what unfolded as each disease went by. I was also very impressed with the anti-infectious nature of magnesium as well. Something I... completely caught me off guard.

Dr. Thomas Levy:

I think you're probably aware that Dr. Klenner cured 60 out of 60 cases of polio back in 1939 with oral and injectable Vitamin C in children and infants. And as it turns out, there was a french investigator in the 1800s that did much the same thing with magnesium chloride solution taken orally. Very, very profound positive results, and that's outlined in the book as well. So it turns out the even though magnesium is not an antioxidant per se, it exerts through other mechanisms a profound antioxidant effect inside cell. Largely by displacing calcium and allowing Vitamin C to accumulate and for glutathione synthesis to become optimized.

Dr. Joseph Mercola:

Yeah, I couldn't agree more, because I... in my book on EMF that was published earlier this year, I go over the mechanism that you just discussed, because the intracellular concentration of Vitamin C is about 50,000 times lower than the extracellular. But when you get an excess amount of calcium inside the cell, it causes nitric oxide and superoxide levels to increase. And those two molecules, once they're formed, it's like instantaneously they form this really pernicious molecule called peroxynitrite, which is a reactive nitrogen species, an RNS, not an ROS, and it lives about nine million times longer than hydroxyl free radical. So because it lives so much longer, it can travel throughout the cell. Outside that it's formed and into the nucleus and really cause a lot of damage, like stem cells, cell membranes, proteins, mitochondria, so it... And I think that's the primary issue is this peroxynitrite, and it spins off carbonate free radicals, which can cause significant damage in the DNA.

Dr. Joseph Mercola:

So I couldn't agree more. Essentially, it's oxidative stress with an increase in the calcium levels, and magnesium is such an elegant solution, because almost everyone of us are deficient.

Dr. Thomas Levy:

That's correct. Its interesting thing is people talk about blood levels of magnesium, well, let me say this, if your blood level of magnesium is low, you're very, very, very low in magnesium throughout your body. However, if you're more fortunate to have a blood of magnesium that falls in the "normal range," you're certainly much better off than the low blood level person, but 99% of magnesium is inside the cells, and of that 95% is inside the mitochondria.

Dr. Thomas Levy:

So even thought it's a water soluble molecule, that is in fact stored, to a great degree, inside the cell, and until... and most of the time the blood is just reflecting your daily intake and excretion, intake and excretion, and if you keep a good level, and you maintain, this "normal level." But if you haven't addressed a lot of other magnesium wasting factors, you're still in fact quite low in your cells, it could still have profoundly negative impacts on different diseases that you might have or might be susceptible to.

Dr. Joseph Mercola:

Do you regularly monitor RBC magnesium levels as a good arbiter of magnesium?

Dr. Thomas Levy:

Well, red blood cells don't have cytoplasm and they're not really a good reflection. I was a little frustrated as I went through the research and I finally came down to, and this is my recommendation, is that they have some experimental tests that are very good, looking at cytoplasmic levels, but not practical tests for you to follow yourself. So number one, if your blood level is low, you're low. You don't need to go any further in testing. Number two, if your blood level is "normal," then really the next step is to go to something called it's the... the website is exatest, E-X-A-T-E-S-T, exatest.com, and they actually get sublingual swabs and they measure intracellular levels or not only magnesium, but calcium and a couple other electrolytes. And further note they actually went to the effort of correlating these results to tissue biopsies taken at the same time, and they correlate it very well with skeletal muscle biopsies and atrial tissue biopsies in patients that were getting biopsies of heart tissue for one reason or another.

Dr. Thomas Levy:

So it appears to be your best direct reflection that we have so far, maybe something will come out better down the road, I don't know, but right now it looks like the best way for you to really know not only what your magnesium level is but even better to get an idea of what... of how well suppressed your calcium levels are inside your cells as well.

Dr. Joseph Mercola:

And how's it make that determination? How [crosstalk 00:45:13]-

Dr. Thomas Levy:

Oh, gosh, it's a scanning machine, I don't know the technology involved, but it gives good reliable reflections of whatever's inside the cell. I'm not [crosstalk 00:45:26]-

Dr. Joseph Mercola:

So it's not only telling you intracellular magnesium but intracellular calcium?

Dr. Thomas Levy:

Yes, sir. Yes, sir.

Dr. Joseph Mercola:

Okay, okay, that's good. That's interesting to know. At least inside the mouth, the buccal mucosa.

Dr. Thomas Levy:

Right.

Dr. Joseph Mercola:

Which is probably-

Dr. Thomas Levy:

Actually, sublingual, sublingual.

Dr. Joseph Mercola:

Oh, it's sublingual. Okay, so... Well, it's... And you've... They've found that that correlates pretty well with other tissue samples.

Dr. Thomas Levy:

Right, it correlates well with other biopsies for the same information, yes.

Dr. Joseph Mercola:

That's good. And how long have you been using the test?

Dr. Thomas Levy:

Well, I only became familiar with the test about the time I was finished writing the book, six months ago.

Dr. Joseph Mercola:

Okay.

Dr. Thomas Levy:

And Dr. Hunninghake has begun using it a little bit. I mean, it's not an outlandishly expensive test, but it's going to run about 250 or $300, so you don't want to just get it for no reason at all. But if you're dealing with problems that could certainly be secondary to magnesium deficiency, it's good to rule that out as best as possible as being a major contributor to whatever it is you might be treating.

Dr. Joseph Mercola:

Okay, and how many people do you... or percentage of the population do you believe is deficient in magnesium?

Dr. Thomas Levy:

Wow. Okay, obviously, it's just my opinion, but I would say between 80 and 90 percent.

Dr. Joseph Mercola:

Mm-hmm (affirmative), I would agree with you. Maybe even higher.

Dr. Thomas Levy:

Maybe even higher.

Dr. Joseph Mercola:

Depends on what definition you use because the challenge, of course is as you just alluded to, we don't really have good testing for intracellular magnesium levels.

Dr. Thomas Levy:

That's correct, but we still [crosstalk 00:46:55]-

Dr. Joseph Mercola:

Even better is your mitochondria magnesium levels.

Dr. Thomas Levy:

But we still also know that just about everybody in the population with given afflictions or diseases they get better when you give them more magnesium. So in that regard it doesn't really matter what that level ends up being if you doing something that's therapeutic and not toxic.

Dr. Joseph Mercola:

Yeah. And why don't you address that now, because that's one of the reasons why magnesium is one of my favorite supplements, and it's one I take pretty much everyday without fail, is the toxicity level. It has almost a built in mechanism to prevent toxicity, so why don't you discuss that, because I think it's really intriguing.

Dr. Thomas Levy:

Sure. Well, as you well know if you get prepared for a colonoscopy and they need to clean out your bowels they give you magnesium chloride I... no, magnesium citrate. [crosstalk 00:47:48] They give you magnesium citrate and of course you go like a goose until you're empty. So obviously when you've taken enough magnesium of any oral type, the down side is that you stop absorbing and it goes to the colon, similar to Vitamin C and causes a loose diarrhea. Now, so is the oral ever toxic? For the most part no, but I need to mention a small subset where it is significant. You have a lot of nursing home patients that have significant constipation and they get magnesium preparations, but if the magnesium preparation doesn't start working, then you have it just sitting there in the gut and in some of those patients it will get over absorbed and cause toxicity. That's about the only subset that I know of for the oral.

Dr. Thomas Levy:

Now, obviously, then or it should be obvious that you can very easily harm yourself by taking too much magnesium too rapidly intravenously. But that's also it's therapeutic effect, and it's a known entity. Matter of fact, in dental surgery they have something called magnesium induced controlled hypotension, because surgeries on the jawbone bleed so badly they want to use something to deliberately bring down to controlled hypotensive levels until you get hemostasis and then they back off on the magnesium and your blood pressure comes back up. But the point I make about that is you give enough magnesium, you can take any blood pressure and bring it down it zero. So within those confines though there's... it's very, very safe and if you... it's a calcium channel blocker and interestingly enough, if you overdose on a prescription calcium channel blocker, you get the same thing. You get severe hypotension. And in fact, ironically enough our pseudo-enemy calcium is one of the ways you bring people out of that.

Dr. Joseph Mercola:

Yeah, interesting. I used to use a lot of intravenous magnesium. I used magnesium sulfate, but after reading your book, I think it should have been magnesium chloride. But the reason it lowers your blood pressure is a vasodilator, it enlarges your blood vessels. And if you inject it rapidly enough, the patients will get very warm, sometimes almost hot and sweating, which is an interesting solution for people who have migraines, which is essentially this spastic interaction of these arteries in the brain that seems to work almost instantly. It was... I'm not sure what your experience is but it was like my go to forgetting rid of an acute migraine. It didn't work all the time, but it worked most of the time.

Dr. Thomas Levy:

Upon my review on migraine, let me say, it's my humble opinion that migraine is completely and totally a magnesium deficiency disease. That's how significant magnesium is in the physiology of that. Interestingly enough at about the same time I was writing on migraine in my book, a friend called me who was going through some horrible situations with a syndrome I had never heard before, called cerebral basal constriction, reversible cerebral basal constriction, and even having a slight bit of a subarachnoid hemorrhage I read up on it, and I said, "Look, this looks identical, basically, to migraine physiology. Start dosing your magnesium like there's no tomorrow." And she did and she eventually came out of it. I guarantee you she hasn't gotten off magnesium since, and she's had no recurring episodes. So just vasospasm general are really migraine deficiency or strongly migraine aggravated disorders.

Dr. Thomas Levy:

One point I'd like to make, you had mentioned earlier about intravenous, is the fact that I also like to tell people never miss an opportunity if you get an IV for any reason at all, to have the opportunity to put magnesium in it.

Dr. Joseph Mercola:

Mm-hmm (affirmative). Crazy not to.

Dr. Thomas Levy:

There were two studies, fascinating studies down on coronary care unit patients with either infarcts or unstable angina. And in one group over 24 hours, the other group 36 hours they infused roughly a gram of magnesium every hour, 24 grams or 36 grams. They all did great. They were only looking at heart parameters, but low and behold, follow up five years later, just that one treatment with magnesium that one day, and there was still a decreased all cause mortality seen five years later. So that's why I say never miss the opportunity to, as you will, stock up your mitochondria on magnesium by taking advantage of the opportunity to get it intravenously.

Dr. Joseph Mercola:

Yeah, and as long as you're not injecting it too quickly-

Dr. Thomas Levy:

Oh, absolutely. No, no, no.

Dr. Joseph Mercola:

... there's no toxicity to it.

Dr. Thomas Levy:

That's a good point too. We talk about these IV pushes of Vitamin C, I'm very careful when I tell people, "You can't be pushing magnesium rapid IV push."

Dr. Joseph Mercola:

Well, you could but you've got to warn them.

Dr. Thomas Levy:

Well, I mean, a smaller amount. I mean, from hypotension not from [crosstalk 00:53:09]-

Dr. Joseph Mercola:

Yeah, yeah.

Dr. Thomas Levy:

Just for hypotension.

Dr. Joseph Mercola:

Have them laying down-

Dr. Thomas Levy:

But in these IV pushes that I'm talking about we'll still routinely put 500 milligrams of magnesium in that and that still goes in in five minutes along with the Vitamin C with no problem.

Dr. Joseph Mercola:

Were you using for the treatment of acute migraines too?

Dr. Thomas Levy:

No, I was using it for anti-viral and general health benefits. In my old age, I've gotten very impatient with sitting still for an IV.

Dr. Joseph Mercola:

Yeah, yes, indeed. No, I like the IV pushes. So I'd like to discuss your preference for magnesium salt in the IVs. It sounds like you would prefer the chloride as opposed to the sulfate.

Dr. Thomas Levy:

I think... Well, most of the research for IV has been done on sulfate, so that's fine. The chloride, this is very fascinating to me, appears to be the best anti-microbial, and they even showed that the sulfate form and the chloride form have opposite effects in vitro studies looking at their effect on, I think, it was virus, maybe another pathogen. One suppressed it, the other encouraged it, and then of course we have the data, if you want to call it data, the anecdotal data of the French physician who cured all the polio with many anecdotal reports. So I think the chloride entity is extremely important for the anti-infectious property of magnesium. So if you're taking for the purposes of infection, magnesium chloride. If you're taking for the IV, magnesium sulfate. If you're taking it orally just for the magnesium, then any of a number of things, magnesium glycinate, magnesium three and eight, magnesium gluconate all of those are great.

Dr. Joseph Mercola:

I've got a question for you on oral preparations. There is one form of magnesium supplement that's not widely known that essentially has no laxative side effect, because it's not a salt. Do you know which magnesium supplement that is?

Dr. Thomas Levy:

No, I'll bite. Tell me.

Dr. Joseph Mercola:

I mentioned it earlier. It's molecular hydrogen tablets, which is metallic magnesium, which when put into water liberates molecular hydrogen gas and ionic elemental magnesium without salt. It's just pure ionic magnesium. So you can take 400 milligrams of elemental magnesium, just swallow it instantly with no laxative effect. It's crazy.

Dr. Thomas Levy:

And what's the form called, Joe?

Dr. Joseph Mercola:

It's magnesium... It's molecular hydrogen [crosstalk 00:55:54] as a tablet.

Dr. Thomas Levy:

Okay.

Dr. Joseph Mercola:

Yeah, the tablet itself is metallic magnesium, in a special format designed to liberate the molecular hydrogen gas over about 90 seconds, and not only the gas, but once it's liberated you have the ionic magnesium... the magnesium ions floating around. So not only do you get molecular hydrogen, which is my absolute favorite supplement, but my number two favorite supplement comes with it for free, magnesium.

Dr. Thomas Levy:

Sounds great. I'm not-

Dr. Joseph Mercola:

Yeah, it's like-

Dr. Thomas Levy:

... that familiar with it, but sounds great.

Dr. Joseph Mercola:

Oh, it is something... I would say it's BE, that's beyond extraordinary. It's... I think you would love it.

Dr. Thomas Levy:

Okay.

Dr. Joseph Mercola:

I'm going to send you a bottle, you're going to love it.

Dr. Thomas Levy:

All right, I appreciate that.

Dr. Joseph Mercola:

You're going to... It's good stuff. So especially, if you have this exposure to oxidizing... or ionizing radiation like when you're flying, which is a real common problem. Oh, sorry, just had to put my power on. All right, so the... would you... are there any other points on the magnesium that you'd like to mention? Because it's such a useful strategy to improve your health. I guess, in the book you talk about some other toxic nutrients, and you've already alluded to one. So I'd like to give you an opportunity to talk about some of the others. The obvious one is the one you wrote your previous book on which is about the calcium lie. I think that was your book-

Dr. Thomas Levy:

No, no, death by calcium was mine.

Dr. Joseph Mercola:

Oh, death by calcium, sorry. Calcium lie was someone else. So, yeah, but both books point to the problems with calcium, as supplementation. Because there was a massive, I guess, implementation of calcium supplements when the connection to osteoporosis became widely appreciated in the 70s and 80s. And your book is sort of a back lash to that in telling the consequences. So why don't you go into that a little bit and talk about some of the other toxic nutrients.

Dr. Thomas Levy:

It's interesting about calcium... It's kind of funny how things just happen to occur, and bones are white, on x-ray they're white, one of your biggest dietary sources of calcium is milk, which is white, and it's incredible how just that cosmetic similarity just gets the marketing of milk going and hyped up so high. It's interesting though when you take large amounts of calcium and this is one of the things that the docs ought to realize out there that might still be using it, is if you take large amounts of calcium, you will make the bone density score a little bit higher, but it's not reflective of good bone. And while that score goes higher, it's like putting paint on a rotting fence, you lean against it, it still breaks. This does not decrease your incidents of osteoporotic fractures, and that's really the only point of trying to treat osteoporosis is to make somebody less prone, stronger bone, and less prone toward osteoporotic fractures.

Dr. Thomas Levy:

And calcium absolutely does to do this while at the same time, of course, accumulating massively throughout your body. There's a lot of different things cited in the book, but the one thing to keep in mind, a lot of people and physicians think, "Oh, well, you're old, your arteries should develop a little calcium." No, it's never, never, never normal to have extracellular calcifications in your body, in a organ, in a blood vessel, that's absolutely not normal. But because we share a lot of our dietary habits, we share a lot of our bad supplemental habits... Kind of horrible to say, bad supplements, but that's exactly what calcium is is a bad supplement. These problems tend to proliferate. Also, and antacids. I mean, you get an overdose, almost a glass of milk worth when you pop a couple Tums or Rolaids, so those are calcium carbonate and for the calcium reasons they're just as toxic as everything else.

Dr. Joseph Mercola:

Yes indeed. So the calcium issues you just described with this back to providing... or creating weaker bones this just reminds me of the phosphinate drugs, or bisphosphinate drugs that are used as... to treat osteoporosis, which do the exact same thing. They increase the bone density, but they decrease the bone strength, and actually increase the risk of fractures, which is just beyond ludicrous, and they have their own intrinsic toxicity. So with respect to extracellular calcium deposition and as a cardiologist, I'm wondering what your thoughts are on using the coronary artery calcium score as a suggestion of a heart disease, or coronary artery calcification.

Dr. Thomas Levy:

It's an excellent test for prognosis, long term prognosis for heart attack, but what's very interesting to Joe is that's obviously what it first came out for, I don't know some 15, 20 years ago and it's evolved over that time, and they have pretty well refined, predictive scales now. But what's very interesting is they've now found that the coronary artery calcium score also correlates directly with all cause mortality. The higher your calcium in the coronaries, the higher your chance of death from any cause. And this I think is quite straight forward. The calcium is just the sentinel that's indicating to you what the calcium status is throughout the rest of the body as well. So if you have high coronary calcium, you have high extracellular calcium throughout the body as well, which is why it reflects in increased all cause mortality and not just increased cardiac mortality.

Dr. Thomas Levy:

But, yes, it's an excellent test. And so far it's one of the few tests we have, that I know of, to clearly tell you if your overall supplemental nutrition healthcare regimen is working optimally. And it's only working optimally is if you started it and you had a calcium score of a 100 and six months to a year later it's down to 50 and two years later it's down to zero, then that's a good program.

Dr. Joseph Mercola:

Okay. So I have never ordered the test, but I believe it's an x-ray, so it's ionizing radiation, but is it a CAT scan too on top of that?

Dr. Thomas Levy:

It's basically a CAT scan, yes.

Dr. Joseph Mercola:

So CAT scan is enormous levels of radiation, literally, a 100 times or more that of a chest x-ray, so if you're going to do that test, I would caution you to do a number of things. One is treat it like you're going to get chemotherapy and that you should be fasting for a day or two. Why? Because when you're fasting, you'll be in nutritional ketosis and ketones are a profoundly effective mitigator against oxidative stress. You could take Vitamin C like Dr. Levy suggests too. You could also take molecular hydrogen. I would take four, six, 10 tablets about a half hour before the scan, which will radically decrease your risk of this oxidative damage. In fact, this molecular hydrogen is so potent and useful that NASA is studying it for mitigating the oxidative stress that the astronauts are exposed to. So great test, but just be really careful about this oxidative stress, because... And that's not just true for this coronary artery CAT... the coronary artery calcium score, but for any CAT scan. These diagnostic tests can be very dangerous and any CAT scan is... certainly falls into that category.

Dr. Thomas Levy:

Sure.

Dr. Joseph Mercola:

Yeah, so-

Dr. Thomas Levy:

I can't disagree with that sir.

Dr. Joseph Mercola:

Yeah, yeah. It's just... I mean, thank God we have them, but boy, they come at a cost. So we discussed calcium, but there's two other ones that you mentioned in the book too. The iron and then I believe-

Dr. Thomas Levy:

Copper.

Dr. Joseph Mercola:

Copper, yes.

Dr. Thomas Levy:

Yeah, they're what I call the three toxic nutrients. And I don't mean that as a pun or a joke. They're certainly absolutely, without any qualification essential at lower doses for normal metabolism. Calcium, I mean, plays a role in just about everything. The contraction of your heart. Iron is essential for blood production. Copper plays a similar but lesser role to iron in many of the things that it does. And I don't know... I don't know whether you agree with this or not, but I've yet to see... I know there are articles about in vitro, but I have yet to see a person that I think is legitimately deficient in copper. But whether or not that person exists, the more important one is iron. And iron, in my opinion, you should never supplement if you do not have a iron deficiency anemia, hypochromic, microcytic anemia. Because, well, for all the things that iron does it's very tiny amounts of iron that are needed to be coenzyme et cetera, but you need relatively massive amounts to make normal blood count.

Dr. Thomas Levy:

So if you're making enough blood, you have enough iron for everything else. Combined with that and I don't know if people want to be shocked they can go to YouTube and type in Dr. Levy iron video and you'll be absolutely appalled to see what's been put in our fortified enriched foods for the last 70 years. And I've got news for you, I'm not nuts, they put in metallic iron filings. Now how on Earth that's nutritious is beyond me, but even if they put in a legitimate supplemental form of iron, still the more iron you accumulate in the body, the greater your body wide oxidative stress is. And oxidative is what we're trying to avoid.

Dr. Joseph Mercola:

Yes, indeed. I would just be... add a minor bit of caution that's only relevant to a few people, but I happen to be one of those people, and not all hypochromic, microcytic anemia's are iron deficiency. Be really careful if you have beta thalassemia like I do or sickle cell anemia, because those present identical. And giving iron in that scenario is the kiss of death and I've seen that done to so many patients.

Dr. Thomas Levy:

Well, you would certainly want to see a very low ferritin level-

Dr. Joseph Mercola:

Yes, yes.

Dr. Thomas Levy:

... a very low ferritin level as well, yes, of course.

Dr. Joseph Mercola:

Right, yeah, that might be a better diagnostic criteria a ferritin level below 20. But when you get high iron levels, I couldn't agree more, it's one of the most toxic products that you... It's very rare where an individual is going to need be iron supplemented, and those rarities would be to anyone who has blood lose or is a growing child or a heavily menstruating woman. But certainly-

Dr. Thomas Levy:

Interestingly enough some younger people who heavily induce... who heavily participate in aerobic activity-

Dr. Joseph Mercola:

Oh, sure. Anemia-

Dr. Thomas Levy:

... long distance running-

Dr. Joseph Mercola:

Chronic anemia.

Dr. Thomas Levy:

... at the end of the season they will have sweated out enough iron to be anemic, interestingly enough.

Dr. Joseph Mercola:

Yeah, so, there are some unusual scenarios but they are unusual and don't [crosstalk 01:07:37]-

Dr. Thomas Levy:

Right, no, mostly it's blood lose, absolutely.

Dr. Joseph Mercola:

Yeah, so, just be really careful, but I couldn't agree with you more on that one. For every person who benefits from iron supplementation, there's probably 10 to 100 who are getting-

Dr. Thomas Levy:

Or more.

Dr. Joseph Mercola:

... dangerous side effects from it.

Dr. Thomas Levy:

Yes, sir.

Dr. Joseph Mercola:

And premature death being one of the major ones. The book again is magnesium: reversing disease. And they're pretty much available at all bookstores, although if Amazon is delivering to your house, that's a big question now, especially when this thing airs, who knows? So all right, well, thank you for all your work and I appreciate you writing the book and sharing your wisdom with us.

Dr. Thomas Levy:

My pleasure. Thanks for having me on Joe. Take care.